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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/982,481
Filing Date: October 17, 2001
Appellant(s): HAO ET AL.

Dan Hu
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/16/2008 appealing from the Office action mailed 4/4/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7221474 Hao 5-2007

D. Keim, M. C. Hao, J. Ladisch, M. Hsu, U. Dayal, "Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation", HP Technical Report, April 11, 2001, pp. 1-10.

M. Ankerst, M. Ester, H.-P. Kriegel, "Towards an effective cooperation of the computer and the user for classification", Proc. 6th Int. Conf. On Knowledge Discovery and Data Mining, (KDD '2000), Aug. 20-23, 2000, Boston, MA, 2000, pp. 1-10.

M.C. Hao, J. Ladisch, U. Dayal, M. Hsu, A. Krug; "Visual Mining of E-customer Behavior Using Pixel Bar Charts", HP Technical Report, June 20, 2001, pp. 1-7.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are rejected under 35 U.S.C. 102(e) as being anticipated by Hao et al. U.S. Patent No. 7,221,474 (hereinafter Hao).

The applied reference has a common Hewlett-Packard with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived

from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Re Claims 44, 50, 56 and 81:

Hao discloses a method executed by a computer to form a pixel bar chart for display on a display monitor (Fig. 2 and 6b and column 7), comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Fig. 2, Fig. 6b and column 7 wherein Hao discloses a set of records corresponding to the pixels in the pixel bar chart and the vertical sorting of the pixels in each group creates subgroups of records corresponding to the pixels with identical colors wherein the records are sorted in accordance with the second attribute and the records of each group are further sorted into each horizontal line----records in the horizontal line of each group constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of records corresponding to the pixels of the same attribute/color wherein the records within each group are sorted*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., at Fig. 2, Fig. 6b and column 7 Hao discloses a pixel is assigned to each of the records and every such pixel in the pixel bar chart is assigned to a different record. Hao teaches that a set of records corresponding to the pixels in the pixel bar chart and the vertical sorting of the pixels in each group creates subgroups of records for each group corresponding to the pixels of the identical colors and the records of each group are sorted in accordance with the second attribute and the records of each*

group are further sorted into each horizontal line----records in the horizontal line of each group also constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of records corresponding to the pixels of the same attribute/color wherein the records of each group is sorted); and

Constructing the pixel bar chart by (*e.g., the pixel bar charts of the Fig. 2, Fig. 6b and column 7*):

Partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., at Fig. 2, Fig. 6b and column 7, Hao teaches that a set of records corresponding to the pixels in the pixel bar chart are divided into groups and the records of each group are further sorted according to the color of the pixels corresponding to the records of each ground into subgroups of records with the same color attribute. The records of each group are further sorted by the vertical sorting wherein the records corresponding to the pixels in each group creates pixel subgroups of identical colors in accordance with the second attribute and the records of each group are further sorted into each horizontal line----records in the horizontal line of each group further constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of the same color attribute as shown in Fig. 6b wherein each group is sorted in accordance with the color attribute. Therefore, the records of each group are sorted in accordance with the color attribute into the subgroups of records with the same color attribute and the records of each group with the same color attribute in Fig. 6b are the records of a subgroup represented by the same color of the pixels representing the records. Fig. 2 also shows a plurality of subgroups within each group. Hao teaches the records are sorted and divided into groups according to the first attribute*

according to the first attribute---meeting the claim limitation of "a first ordering attribute". Hao further teaches that the records in each group are divided into each subgroup of the same color attribute corresponding to the second attribute and each subgroup of records in the same color attribute---the second attribute are further sorted according to the third attribute----meeting the claim limitation of "a second ordering attribute");

Partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute (*e.g., at Fig. 2, Fig. 6b and column 7, Hao teaches that a set of records corresponding to the pixels in the pixel bar chart are divided into groups and the records of each group are further sorted according to the color of the pixels corresponding to the records of each ground into subgroups of records with the same color attribute. The records of each group are further sorted by the vertical sorting wherein the records corresponding to the pixels in each group creates pixel subgroups of identical colors in accordance with the second attribute and the records of each group are further sorted into each horizontal line----records in the horizontal line of each group further constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of the same color attribute as shown in Fig. 6b wherein each group is sorted in accordance with the color attribute. Therefore, the records of each group are sorted in accordance with the color attribute into the subgroups of records with the same color attribute and the records of each group with the same color attribute in Fig. 6b are the records of a subgroup represented by the same color of the pixels representing the records. Fig. 2 also shows a plurality of subgroups within each group. Hao teaches the records are sorted and divided into groups according to the first attribute according to the first attribute---meeting the claim limitation of "a first ordering*

attribute". Hao further teaches that the records in each group are divided into each subgroup of the same color attribute corresponding to the second attribute and each subgroup of records in the same color attribute---the second attribute are further sorted according to the third attribute----meeting the claim limitation of "a second ordering attribute");

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart, wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (*at Fig. 2, Fig. 6b and column 7, Hao teaches that a set of records corresponding to the pixels in the pixel bar chart are divided into groups and the records of each group are further sorted according to the color of the pixels corresponding to the records of each ground into subgroups of records with the same color attribute. The records of each group are further sorted by the vertical sorting wherein the records corresponding to the pixels in each group creates pixel subgroups of identical colors in accordance with the second attribute and the records of each group are further sorted into each horizontal line----records in the horizontal line of each group further constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of the same color attribute as shown in Fig. 6b wherein each group is sorted in accordance with the color attribute. Therefore, the records of each group are sorted in accordance with the color attribute into the subgroups of records with the same color attribute and the records of each group with the same color attribute in Fig. 6b are the records of a subgroup represented by the same color of the pixels representing the records. Fig. 2 also shows a plurality of subgroups within each group. Hao teaches the records are sorted and*

divided into groups according to the first attribute according to the first attribute---meeting the claim limitation of "a first ordering attribute". Hao further teaches that the records in each group are divided into each subgroup of the same color attribute corresponding to the second attribute and each subgroup of records in the same color attribute---the second attribute are further sorted according to the third attribute----meeting the claim limitation of "a second ordering attribute").

In other words, at Fig. 2, Fig. 6b and column 7, Hao teaches that a set of records corresponding to the pixels in the pixel bar chart are divided into groups and the records of each group are further sorted according to the color of the pixels corresponding to the records of each ground into subgroups of records with the same color attribute. The records of each group are further sorted by the vertical sorting wherein the records corresponding to the pixels in each group creates pixel subgroups of identical colors in accordance with the second attribute and the records of each group are further sorted into each horizontal line----records in the horizontal line of each group further constitutes a subgroup with each group, according to the third attribute. Each group is sorted and divided into subgroups of the same color attribute as shown in Fig. 6b wherein each group is sorted in accordance with the color attribute. Therefore, the records of each group are sorted in accordance with the color attribute into the subgroups of records with the same color attribute and the records of each group with the same color attribute in Fig. 6b are the records of a subgroup represented by the same color of the pixels representing the records. Fig. 2 also shows a plurality of subgroups within each group.

Hao teaches the records are sorted and divided into groups according to the first attribute according to the first attribute---meeting the claim limitation of "a first ordering attribute". Hao

further teaches that the records in each group are divided into each subgroup of the same color attribute corresponding to the second attribute and each subgroup of records in the same color attribute---the second attribute are further sorted according to the third attribute----meeting the claim limitation of "a second ordering attribute."

The claims 50, 56 and 81 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45-48, 53-54, 59-60, and 63-80 and 82-90:

The claims 45-48, 53-54, 59-60, and 63-80 and 82-90 are subject to the same rationale of rejection set forth in the claim 44.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are rejected under 35 U.S.C. 102(a) as being anticipated by D. Keim, M. C. Hao, J. Ladisch, M. Hsu, U. Dayal, "Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation", HP Technical Report, April 11, 2001, pp. 1-10 (hereinafter Keim).

Re Claims 44, 50, 56 and 81:

Keim discloses a method executed by a computer to form a pixel bar chart for display on a display monitor, comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Page 2 of Keim discloses the one-to-one correspondence between the data records and pixels in the pixel bar charts*; *see Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10*); and

Constructing the pixel bar chart by (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 disclose pixel bar charts*):

Partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute (*Fig. 7 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 wherein the first ordering attribute is the first dividing attribute; Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data*

records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. ***The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute***);

Partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute (*Fig. 7 discloses the first ordering attribute on the x-axis and the second ordering attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 wherein the second ordering attribute is the second dividing attribute; Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes.* ***The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute***);

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart (*Fig. 7 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10*), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10*).

The claims 50, 56 and 62 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Keim further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer*).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Keim further discloses the claim limitation the visual indicator comprises color (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer, e.g., sales amount, number of visits or sales quantity*).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Keim further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels (*Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and*

dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. ***The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors***).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Keim further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g., Figs. 1b, 3b, 4 and 9-10*).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Keim further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

Re Claim 64:

Keim further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as

product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

Re Claim 65, 72 and 78:

Keim further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the visual indicator attribute such that at least some of the record-assigned pixels have different colors. Keim discloses in Figs. 1b, 2, 3b, 4a, 4b, 4c and 9-10 the claim limitation. See also Page 2-3 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 2-3 of Keim disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors; see also Pages 6-7 for the partitioning algorithm or the pixel placement algorithm; see Figs. 8-10 for the sub-groups of pixels according to a second dividing attribute.

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Keim further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Figs. 6-7*).

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Keim further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Figs. 6-7*).

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

Claims 83-90:

In the new amendment filed August 8, 2007, Applicant added new claims 83-90 reciting "the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes." However, Applicant's specification discloses in Page 10 that "each of the first dividing attribute and the second dividing attribute may be the same as the first ordering attribute, the second ordering attribute and the visual indicator attribute." Applicants pixel bar chart(s) in Figs. 3(a)-3(c) failed to show the first dividing attribute and

the second dividing attribute may be distinct from the first order attribute and the second ordering attribute.

Keim discloses in Page 5 and Section 4.2 the claim limitation that "the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes" as well as selecting from the plurality of attributes.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-90 are rejected under 35 U.S.C. 102(b) as being anticipated by M. Ankerst, M. Ester, H.-P. Kriegel, "Towards an effective cooperation of the computer and the user for classification", Proc. 6th Int. Conf. On Knowledge Discovery and Data Mining, (KDD '2000), Aug. 20-23, 2000, Boston, MA, 2000, pp. 1-10 (hereinafter Ankerst).

Re Claims 44, 50, 56, and 81:

Ankerst discloses a method executed by a computer to form a pixel bar chart for display on a display monitor (*e.g., the pixel bar chart of Fig. 3 particularly sorted by the categorical*

characteristic wherein the attributes are mapped to the numerical numbers in Figs. 3-5),

comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 3 of Ankerst discloses obtaining the amount of the DNA training data items with* ***a plurality of attributes*** *and Fig 5 shows that plural* ***data items from two different classes with two numerical attributes***);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Any of the Figs. 3-5 and 7 discloses a pixel bar chart. e.g., the pixel bar chart of Fig. 3 includes the last row having the attribute number 120 wherein every pixel in each of the charts is assigned to a unique training data item/record and the claim limitation that every pixel in the chart is assigned to a training data item is explicitly taught in column 2 of Page 3 and Figs. 3-5);* and

Constructing the pixel bar chart by (*Any of Figs. 3-5 and7 disclose a pixel bar chart*):

Partitioning the record-assigned pixels into groups (*of pixels assigned according to the attribute values; see Figs. 4-5 wherein pixels are organized into groups along the y-axis in accordance with the categorical attribute numbers*) along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., See Figs. 3-5 and 7 wherein the colored pixels are clearly shown wherein the first dividing attribute is set forth in the x-axis. See Page 3. Within a bar, the sorted attribute values are mapped to pixels in a line-by-line fashion according to their order (See Fig. 2 or Fig. 4 for this order). Each attribute is visualized independently from the other attributes in a separate bar. Thus the first dividing attribute is the numerical characteristic*

determining the ordering for the categorical attributes in accordance with the categorical attribute numbers; see Fig. 5);

Partitioning the record-assigned pixels in the groups into sub-groups (*See Fig. 4-5 wherein the pixels in the groups of categorical attributes are further divided into sub-groups or class partitions along the x-axis in accordance with the splitting attribute by performing an n-ary split*) along a second axis of the pixel bar chart according to a second dividing attribute (*e.g., by splitting as disclosed in Page 5; the second dividing attribute is the splitting attribute and thus second dividing attribute is along the x-axis of Fig. 3-5 wherein the attributes are divided along the x-axis into class partitions by the virtue of the splitting attribute*);

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute (*e.g., See Figs. 2-5 and 7 wherein the pixels in the class partitions are sorted in two-dimensional space and pixels in each class partitions are sorted on a line-by-line basis*) along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart (*See Page 3. Within a bar, the sorted attribute values are mapped to pixels in a line-by-line fashion in a two-dimensional space according to their order (See Fig. 2 or Fig. 4 for this order). Fig. 2-5 and 7 discloses the first ordering attribute and the second ordering attribute wherein the pixels in each class partition are sorted on a line-by-line basis on the two-dimensional space. Two-dimensional sorting in taught in Page 3 which requires a first ordering attribute along the x-axis and a second ordering attribute along the y-axis. The first and second ordering attributes are employed to order the pixels in two-dimensional space according to the sorted attribute values falling into*

Class A, Class B or Class C), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (*Figs. 3-5 and 7*).

The claims 50, 56 and 81 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Ankerst further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (*Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Ankerst further

discloses the claim limitation the visual indicator comprises color (*Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Ankerst further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes (*e.g., Pages 3 of Ankerst discloses data items of the DNA training data with a plurality of attributes and Fig 5 plots the training data items from two different classes with two numerical attributes*) and said method further comprises assigning a selectable visual indicator (*e.g., color*) to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels (*Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Ankerst further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g., by splitting as disclosed in Page 3 by selecting the splitting attribute of Page 4; See Figs. 3-5 and 7 wherein the colored pixels are clearly shown and Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Ankerst further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group (*e.g., the first ordering attribute is according to the categorical attribute numbers; see Figs. 2-5 and the second ordering attribute is according to the splitting attributes by splitting the group into class partitions).*

Re Claim 64:

Ankerst further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms (*e.g., the first ordering attribute is according to the categorical attribute numbers; see Figs. 2-5 and the second ordering attribute is according to the splitting attributes by splitting the group into class partitions*).

Re Claim 65, 72 and 78:

Ankerst further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the visual indicator attribute such that at least some of the record-assigned pixels have different colors (*Fig. 1 illustrates a possible color coding of the different class labels and Figs. 3-5 and 7 illustrate the color coded pixels wherein one segment of pixels has different colors from the other segment of pixels*).

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Ankerst further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Fig. 3-5 wherein the training data items having the categorical attribute 1 is clearly different from the training data items having the categorical attribute 2 and therefore the widths are different and the heights of the class partitions are clearly different; see Page 5*).

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Ankerst further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Fig. 3-5*).

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

Claims 83-90:

In the new amendment filed August 8, 2007, Applicant added new claims 83-90 reciting "the first dividing attribute, second dividing attribute, first ordering attribute, and second ordering attribute are distinct attributes." However, Applicant's specification discloses in Page 10 that "each of the first dividing attribute and the second dividing attribute may be the same as the first ordering attribute, the second ordering attribute and the visual indicator attribute."

Applicants pixel bar chart(s) in Figs. 3(a)-3(c) failed to show the first dividing attribute and the second dividing attribute may be distinct from the first order attribute and the second ordering attribute.

Ankerst teaches in Page 4 selecting categorical attributes (dividing attributes) from a plurality of categorical attributes. Ankerst teaches in Fig. 3 an ordering attribute and in Page 3 that each attribute is sorted separately and the induced order is used for the arrangement of the pixels and using the categorical attribute as the first dividing attribute and then mapping the categories into the different numbers in order to sort the bars (groups) and thus the first ordering attribute (the mapping number of the categorical attribute) is distinct from the first dividing attribute (categorical attribute). Ankerst teaches the sorting order determined by an algorithm (Page 3). Ankerst further discloses a different sorting mechanism for sorting the bars (groups) that the user is enabled to change the sorting of the categories by manually dragging them to a desired position. Ankerst teaches selecting a splitting attribute from several candidate splitting attributes (Page 5). Ankerst discloses in Page 4 that the user has to select the splitting attribute as well as the splitting point for each node in the current bar. Ankerst also discloses that the best split points can be calculated and visualized as well. Ankerst teaches the splitting attributes for dividing each bar (group) of pixels into class partitions and pixels/records in each class partition are ordered in a specified way (See Figs. 4-5). Ankerst discloses that the sorted attribute values (second ordering attribute) are mapped to pixels in a line-by-line fashion according to their order for pixels in a class partition or a bar wherein the Fig. 2 indicates the sorting order within each bar and thus the sorting order for each class partition within each bar.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by **others** in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 44-48, 50, 53-54, 56, 59-60, and 63-82 are rejected under 35 U.S.C. 102(a) as being anticipated by **M.C. Hao, J. Ladisch, U. Dayal, M. Hsu, A. Krug**; "Visual Mining of E-customer Behavior Using Pixel Bar Charts", HP Technical Report, June 20, 2001, pp. 1-7 (hereinafter Hao).

Re Claims 44, 50, 56 and 81:

Hao discloses a method to form a pixel bar chart, comprising:

Obtaining a set of records, each record comprising a plurality of attributes (*e.g., Pages 1 and 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts; the time type is the x-axis and the purchase dollar amount is the y-ordering attribute and the number of visits are the color attributes*);

Assigning a pixel to each of said records to provide record-assigned pixels, wherein every such record-assigned pixel in the chart is assigned to a different record (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*); and

Constructing the pixel bar chart by (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6 disclose pixel bar charts*):

Partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute (*e.g., Page 3 wherein the first dividing attribute is along x-axis such as "Month"; Figs. 1, 2, 4, 5, and 6*);

Partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute (*See Page 3 wherein the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute*);

After partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute (*Page 5 discloses the first ordering attribute on the x-axis and the second order attribute on the y-axis as does e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*) along the first axis of the pixel bar chart, and according to a second ordering attribute along the second ordering attribute along the second axis of the pixel bar chart (*e.g., See Page 3 wherein the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute. See Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 and Figs. 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and*

dollar amounts), wherein each record-assigned pixel is adjacent at least one other record-assigned pixel (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*).

The claims 50, 56 and 81 are subject to the same rationale of rejection set forth in the claim 44.

Re Claims 45 and 57:

The claim 45 encompasses the same scope of invention as that of the claim 44 except additional claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels. However, Hao further discloses the claim limitation for each record-assigned pixel assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer*).

The claim 57 is subject to the same rationale of rejection set forth in the claim 45.

Re Claims 46 and 58:

The claim 46 encompasses the same scope of invention as that of the claim 45 except additional claim limitation the visual indicator comprises color. However, Hao further discloses the claim limitation the visual indicator comprises color (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values*

wherein the color represent an additional attribute of the customer, e.g., sales amount, number of visits or sales quantity).

The claim 58 is subject to the same rationale of rejection set forth in the claim 46.

Re Claims 47, 53 and 59:

The claim 47 encompasses the same scope of invention as that of the claim 44 except additional claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels. However, Hao further discloses the claim limitation said records are obtained from a multidimensional data set in which each record comprises a plurality of attributes and said method further comprises assigning a selectable visual indicator to each record-assigned pixel based on an attribute of each record so that some pixels have a different visual indicator than other pixels (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6. See also Page 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 and Fig. 6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts*).

The claims 53 and 59 are subject to the same rationale of rejection set forth in the claim 47.

Re Claims 48, 54, and 60:

The claim 48 encompasses the same scope of invention as that of the claim 44 except additional claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column. However, Hao further discloses the claim limitation wherein the pixel bar chart comprises a plurality of columns, each column comprising a plurality of pixels and having a width measured in terms of pixels, and the method further comprises causing the width of at least one column to be different than the width of at least one other column (*e.g., Page 5-6; Figs. 1, 2, 4, 5, and 6*).

The claims 54 and 60 are subject to the same rationale of rejection set forth in the claim 48.

Re Claims 63, 67, 70-71, 77:

Hao further discloses the claim limitation of sorting the record assigned pixels in each sub-group according to the first and second ordering attributes and performing a two-dimensional sort of the record-assigned pixels in each sub-group. Hao discloses in Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute.

Re Claim 64:

Hao further discloses the claim limitation of determining a first one-dimensional histogram for the first ordering attribute, and a second one-dimensional histogram for the second ordering attribute, wherein sorting the record-assigned pixels in each sub-group is based on the first and second one-dimensional histograms. Hao discloses in Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute.

Re Claim 65, 72 and 78:

Hao further discloses the claim limitation of selecting a visual indicator attribute from the plurality of attributes, wherein the visual indicator attribute is different from both the first and second ordering attributes; and applying colors to the record-assigned pixels according to the visual indicator attribute such that at least some of the record-assigned pixels have different colors. Hao discloses in Page 3 the claim limitation. Hao discloses in Page 3 that the second dividing attribute is along the y-axis based on the attribute values such as the purchase amount or search type; see Fig. 2 wherein the sub-groups are the clusters of pixels having the same attribute values of the second ordering attribute and the second ordering attribute is the same as the second dividing attribute. See also Page 5-6 and Figs. 5-6 that the pixels are colored corresponding to the different attribute values wherein the color represent an additional attribute of the customer; e.g., Pages 5-6 of Hao disclose a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as time type, number of visits and dollar amounts.

The claims 72 and 78 are subject to the same rationale of rejection set forth in the claim 65.

Re Claims 66, 69, 73, 75-76, 80 and 82:

Hao further discloses the claim limitation that partitioning into sub-groups causes at least some of the sub-groups to have different widths measured in terms of pixels along the first axis, and causes at least some of the sub-groups to have different heights measured in terms of pixels along the second axis (*e.g., Fig. 2 and Page 3*).

The claims 69, 73, 75-76, 80 and 82 are subject to the same rationale of rejection set forth in the claim 66.

Re Claims 68, 74 and 79:

Hao further discloses the claim limitation of constructing the pixel bar chart by arranging the sub-groups in an array defined by the first and second axes (*e.g., Fig. 2 and Page 3*).

The claims 74 and 79 are subject to the same rationale of rejection set forth in the claim 68.

(10) Response to Argument

On page 8-9 in the ARGUMENT, the Appellant argued with respect to the claim 44 and similar claims in substance:

(A) "this partitioning is clearly distinguished from the sorting that is recited later in claim 44, where the sorting according to first and second ordering attributes along first and second axes are performed after partitioning into the sub-groups".

IN response to arguments in (A), Hao-'474 discloses at Fig. 2 the claim invention. Hao discloses that the data records are divided into groups marked 1950, 1960, 1970, 1975 and 1980. The data records are first partitioned according to the first dividing attribute----year. Each group is partitioned into plural subgroups marked GAS, OIL and COAL etc. The subgroups in each group are divided in accordance with the second dividing attribute----fuel type. The subgroups have different heights along the y-axis as visualized in Fig. 2. Appellant argues that Fig. 2 was described in the Background section of Hao '474. However, Fig. 2 still constitutes the prior art. Clearly, Fig. 2 also shows that the pixels are arranged/sorted in a two-dimensional space and thus Hao teaches a first ordering attribute and A second ordering attribute in the two-dimensional arrangement of pixels within each partition of a particular bar of the plural bars in the pixel bar chart.

Moreover, Hao '474 teaches in Figs. 5a-6c that the data records are divided into groups in accordance with a dividing attribute (a first dividing attribute) and each group is divided into subgroups of pixels in accordance with a coloring attribute (a second dividing attribute) wherein the pixels are aggregated into the subgroups of the pixels and each subgroup of pixels has the same color. The pixels in each subgroup are sorted in accordance with the first ordering attribute along a first axis and the second ordering attribute along a second axis (See Fig. 4). The first ordering attribute may selected different from first dividing attribute (Hao '474 column 5, lines

10-20) and the second ordering attribute may selected different from the second dividing attribute (Hao '474 column 5, lines 1-25).

On page 11-16 in the ARGUMENT, the Appellant argued with respect to the mostly recently filed Rule 1.132 Declaration (filed March 20, 2007) in substance:

> (B) "The Rule 132 Declaration does not allege that Adrian Krug contributed to the entire content of the Keim HP Technical Report….."

Appellant's arguments with regards to the Rule 132 Declaration filed March 20, 2007 (it is noted three Declarations have been filed during the prosecution of the present application, however, Appellant only argues with respect to the Declaration filed March 20, 2007). Appellant is silent to the Examiner's responses to arguments that other Declarations filed prior to March 20, 2007 are defective.

The Office Action 4/4/2008 has addressed most of the Appellant's newly filed arguments set forth in Pages 11-16 of the ARGUMENTS. Again, the Declaration is deflective for a number of reasons set forth in the Office Action. In the Brief, Appellant clearly made new arguments, but failed to directly respond to the Examiner's specific reasoning set forth in the Office Action.

Appellant repeatedly cites many different sections/paragraphs in MPEP and argues that the Examiner has not pointed to any rule or law that prohibits the use of a Rule 132 declaration in the present context. However, Appellant failed to recognize that Appellant have incorporated so many erroneous statements in the declaration. While a *proper or successful* Rule 132 declaration may be employed to overcome a prior art reference, the Declaration filed by

Appellant is defective and cannot be employed to overcome the Keim HP Technical Report for a number of reasons set forth in the Office Action 4/4/2008. At least the erroneous statements in the Declaration must be removed during the prosecution of the present application.

Nothing in MPEP can be found that a defective declaration should be accepted. Citing the many sections of MPEP does not justify the erroneous statements, nor does it justify the uncertainness Appellant has shown in the declaration. Throughout Appellant's ARGUMENTS in the Brief, *Appellant misinterpreted MPEP with regards to the term "Applicant" set forth in the MPEP*. The following set forth the reasons why the Declaration filed March 20, 2007 is defective.

In a non-limiting example, Item 3 of Appellant's Declaration stated that the subject matter of the cited Keim reference is originated from the Applicant *including Andrian Krug*. However, the factual evidence before us is that the subject matter of the cited Keim reference is originated from the Applicant *not* including Andrian Krug. However, Appellant erred in the statement that the subject matter of the cited Keim reference is originated from the Applicant *including Andrian Krug*. The declaration cannot be accepted due to the erroneous statement.

In a non-limiting example, Item 4 of Appellant's Declaration stated that the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant (*including ... Andrian Krug...*) of the present application. However, the factual evidence before us is that the subject matter of the cited Keim reference derived their knowledge of the subject matter described in the Keim reference from the Applicant *not* including Andrian Krug. Therefore, Appellant erred in their statement that the

subject matter of the cited Keim reference derived their knowledge from the Applicant *including Andrian Krug*. The declaration cannot be accepted due to the erroneous statement.

In a non-limiting example, Item 5 of Appellant's Declaration stated that the Keim HP Technical Report describes the work of the Applicant (including inventors …. Andrian Krug…) of the present application. However, the factual evidence before us is that the Keim reference describes the work of the Applicant *not* including Andrian Krug. Therefore, Appellant erred in the statement that the subject matter of the cited Keim reference derived their knowledge from the Applicant *including Andrian Krug*. The declaration cannot be accepted due to the erroneous statement.

Moreover, in the present application, the Affidavits filed by the Applicant are directed towards the authorship of the Keim Technical Report, rather than the inventorship of *the claimed subject matter*. No mention of the claimed subject matter has been mentioned about Krug's inventorship. Instead, the authorship of the Keim Technical Report has been declared. Thus, the declaration lacks a showing of facts that Krug's inventorship of the claimed subject matter as all the statements in Affidavits (e.g., Item 3) are concerned with the authorship of Keim Technical Report, as opposed to the inventorship of the claimed subject matter.

The factual evidence before us is that Adrian Krug was not an author in the printed Publication and the statements in the Affidavits do not provide any factual evidence of Andrian Krug's inventorship of the claimed subject matter. Applicant cannot change the authorship of the printed publication by filing the declaration. Therefore, the Affidavit is flawed because the declaration as filed does not follow the MPEP in this regard.

While the Affidavits can be used as vehicle to establish the inventorship of the claimed subject matter, numerous Affidavits filed during the prosecution of the present application by Appellant are employed as a vehicle to establish the authorship of the printed publication. The authorship of the printed publication cannot be altered by Affidavits. In this regards, Appellant's declaration filed 3/20/2007 is flawed.

Moreover, according to MPEP, a statement by the applicants regarding their inventorship in view of an article, patent, or published application may not be sufficient where there is evidence to the contrary. The following evidence shows that Adrian Krug has no possession of the claimed subject matter in the present application.

There is no statement in Affidavits as to whether *the claimed subject matter* is originated from or is related to the Keim HP Technical Report. Only the claimed subject matter at issue is of significance here. However, Appellant's Declaration stated that the subject matter of the cited Keim reference is originated from the Applicant *including Andrian Krug*. However, the factual evidence before us is that the subject matter of the cited Keim reference is originated from the Applicant *not* including Andrian Krug. Therefore, Appellant erred in the statement that the subject matter of the cited Keim reference is originated from the Applicant *including Andrian Krug*. The declaration cannot be accepted due to the erroneous statement.

That Keim's contents were originated from Applicant does not establish Krug's inventorship thereof. Even if Andrian Krug may have done some work to Keim Publication, he has not seen fit to characterize it as "his invention". Thus, Appellant has not met the burden of proving facts sufficient to overcome the *prima facie* available reference.

Appellant also cited In re Land & Rogers, 368 F.2d 866, 879, 151 U.S.P.Q. 621 (C.C.P.A. 1966). Andrian Krug has been effectively excluded from the inventorship of the claimed subject matter because Andrian Krug is the coauthor of the Hao HP Technical Report. The Hao and Krug Publication was later published than the Keim Publication. Prior to the application date of the present application, *there is no publication or evidence showing that Krug has the possession of the inventorship for the claimed subject matter* set forth in the claims 83-90. As a matter of fact, the Hao Publication, which Krug is a coauthor, does not show the subject matter set forth in the claims 83-90. Krug does not show any other work (facts) related to the claimed subject matter, prior to the application date of the present application. In the Brief, Appellant failed to respond the Examiner's above-mentioned responses.

Appellant further argues that the Hao and Krug Publication does not disclose the claimed subject matter that in Hao there is only partitioning along the x-axis. If Appellant's argument were true, the Hao and Krug was later published and thus Krug is not aware of the subject matter at issue because Krug failed to disclose an improvement to the pixel bar chart in the claimed subject matter prior to the application date of the present application in Hao Publication. The claimed subject matter is an improvement over the Hao and Krug Publication. Andrian Krug is a co-author of the Publication that discloses a pixel bar chart having only one partitioning attribute and thus does not teach the claimed subject matter (See Page 22 of Remarks filed 8/8/2007). This is in direct contrast with the CCPA case. To the extent that the examiner pointed out the Hao and Krug Publication may also teach the claimed subject matter set forth in the claim 44, for example, Appellant disagrees and contended that Hao and Krug only teaches one partitioning

attribute. Thus, Appellant admits that Krug has no possession of the claimed subject matter as shown in the evidence of the Hao and Krug Publication before the present application was filed.

In ARGUMENT, Appellant made effort arguing that the Rule 132 Declaration does not allege that Andrian Krug contributed to the entire content to the Keim HP Technical Report. Appellant failed to address the Examiner assertion that contribution to the subject matter of the Keim HP Technical Report is not the same as or does not necessarily mean the contribution to *the claimed subject matter* set forth in the claim invention of the present application. With so many erroneous statements, Appellant's Declaration is defective in that Appellant declares the subject matter of the Keim HP Technical Report, as opposed to the claimed subject matter. Appellant ignored the difference between the authorship of the prior art reference and the inventorship of the present application. Appellant ignore the difference between the subject matter of the prior art reference and *the claimed subject matter of the present application*.

Appellant also failed to the Office Action set forth 4/4/2008 with regards to the defective Rule 132 Declaration. The subject matter of the Keim HP Technical Report contributed by Andrian Krug may differ from the subject matter of the claimed invention. Some subject matter of the Keim HP Technical Report may have no bearing to the subject matter of the claimed invention, and thus Krug's possible contribution to the Keim HP Technical Report may have no bearing with the claimed subject matter. Appellant failed to particularly point out or lacked a showing of the fact what portion of contents in Keim Publication that Andrian Krug has substantially contributed to. Appellant lacked a showing that Andrian Krug has specifically contributed to the claimed subject matter at the time Keim HP Technical Report was published. That is to say, establishing authorship of the reference is different from establishing inventorship

of the claimed subject matter. Appellant equates the inventorship of the claimed subject matter with the authorship of the cited reference. *Appellant has not established inventorship in the same manner as did Blout-and-Rogers and Mathews*.

Here, it is understood that Affidavits can be employed to establish the inventorship against the prior art reference. Instead of establishing the inventorship of the claimed subject matter, Appellant chooses to establish the *authorship* of the Keim HP Technical Report since Appellant apparently *goes so far* to declare that the authorship of the Keim HP Technical Report should have been changed, which is factually an error in the Affidavits. Appellant cannot and thus failed to change the authorship of the Keim Publication. Appellant's Declaration filed 3/20/2007 again is defective for these reasons.

Appellant has not established inventorship in the same manner as did Blout-and-Rogers and Mathews at least because Appellant failed to change the authorship of the Keim Publication by stating that the entire content of Keim HP Technical Report was originated from the Applicant (some of the applicants or applicants Hao-Dayal-Hsu-Keim-Ladisch-Krug as a collection, not Krug alone). The content of the declaration is defective. Appellant argues citing several different portions of MPEP. However, nowhere in the MPEP cited by Appellant instructs the Appellant to declare a change in the authorship of the subject matter in Keim HP Technical Report. Nowhere in the MPEP instructs the Appellant to declare the ownership of the subject matter of the prior art reference by a non-author. Instead of declaring Krug's inventorship of the claimed subject matter, the authorship of the subject matter in the prior art has been declared in the Declaration. Thus, the Declaration is defective.

Moreover, further evidence shows that Andrian Krug has no possession of the claimed subject matter prior to the application date of the present application.

Andrian Krug, who is also a coauthor of Hao HP Technical Report, has been effectively removed from the inventorship of the claimed subject matter by Applicant's argument that Andrian Krug in the Hao Publication does not teach the claimed subject matter prior to the application date of the present application. Even if there were only the aforementioned affidavits to evidence Andrian Krug's contribution to the Keim HP Technical Report, the inventorship of the claimed subject matter remains unresolved and has not been clearly established in the Affidavits because the Affidavits assume that the inventorship of the claimed subject matter is equivalent to Krug's contribution to the Keim Technical Report or the authorship of Andrian Krug in the Keim Technical Report. Appellant failed to provide statements with regards to the inventorship of *the claimed subject matter* in any way related to the Keim HP Technical Report in the Affidavits. Nor has Appellant acknowledged in the Affidavits that Keim HP Technical Report teach every aspect of the claimed subject matter, especially the new claims included in the present amendment. Appellant's Affidavits are clearly deficient at least for the above reasons.

Appellant also cited In re Facius, 408 F.2d 1396, 161 U.S.P.Q. 294 (C.C.P.A. 1969). In this case, the board's decision is affirmed by the court. Appellant apparently cited a CCPA case against himself. Moreover, in the present application, Appellant uses the vehicle of the Affidavit under 1.132, as opposed to Affidavit under 1.131 in the *In re Facius* case. Moreover, Appellants' affidavits under 132 are insufficient to overcome the cited Keim reference and lack a showing of facts that Adrian Krug is an author or contributor to the Keim Technical Report. Since the Keim

publication is *prima facie* available as a reference against Appellants, the burden is on Appellants to establish the facts necessary to "overcome" that reference. Appellants have failed to meet this burden.

In the declaration filed on March 20, 2007, Appellants addressed the Keim reference, i.e., D. Keim, M. C. Hao, J. Ladisch, M. Hsu, U. Dayal, "Pixel Bar Charts: A New Technique for Visualizing Large Multi-Attribute Data Sets without Aggregation", HP Technical Report, April 11, 2001, pp. 1-10 (hereinafter Keim). Appellants stated that, "the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant of the present application" and "the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant of the present application." The examiner is not impressed. They are deemed insufficient to overcome the cited reference. Moreover, Appellants failed to provide support to the statements and speculated, "the entire content of the Keim HP Technical Report originated with or was obtained from the Applicant of the present application" wherein Appellant may just refer to one or more inventors, Keim-Hao-Hsu-Ladisch-Dayal. Clarification is required.

Appellant further speculated that, "the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant of the present application." MPEP is not followed in Appellant's declaration. Moreover, Appellant's statement is flawed because Appellant stated that the authors of the Keim HP Technical Report derived their knowledge of the subject matter described in the Keim HP Technical Report from the Applicant of the present application (emphasis added). To the

contrary of applicant's statement, the subject matter described in the Keim HP Technical Report is not derived from Appellant of the present application. As discussed above, Appellant may refer to one or more of the inventors, Keim-Hao-Hsu-Ladisch-Dayal. The Keim HP Technical Report is NOT fully described in the present application as the descriptions set forth in Keim HP Technical Report and those in the present application are substantially different. For example, the disclosure set forth in Keim HP Technical Report is not the same as the disclosure in the present application. The Keim HP Technical Report is substantially different from the present application at least for the reasons that the contents of the Keim HP Technical Report differ from the description of the present application. Appellant thus failed to support how the difference in the Keim HP Technical Report can be derived from the Appellant of the present application. The inventor Adrian Krug has not contributed to the Keim HP Technical Report. Finally, Appellants have not properly addressed the fact that Adrian Krug who is not the author of the published Keim HP Technical Report by submitting 1.312 Declaration stating that Adrian Krug should have been an author of the Keim Technical Report. The Declaration is defective at least for these reasons. Moreover, the general public already knows that Adrian Krug is not an author of the printed publication. It is too later for applicant to add an author in the already published printed publication.

In a summary, the defective Declaration filed 3/20/2007, as other declarations filed prior to 3/20/2007, should not be accepted to overcome the Keim reference. Due to the defective Declaration, the Keim reference constitutes a prior art reference and the rejection based on the Keim reference is maintained.

On page 17-18 in the ARGUMENT, the Appellant argued with respect to the Ankerst reference in substance:

> (C) "The Examiner stated that Figs. 4 and 5 of Ankerst disclose pixels 'organized into groups along the y-axis in accordance with the categorical attribute numbers…' 4/4/2008 Office Action at 42. The reference to 'categorical attribute numbers' appears to refer to the numbers such as 61, 85, 90 and 120 in Figs. 3 and 5 of Ankerst. The 'groups' along the y-axis referenced by the Examiner appears to be the different rows (or bars) depicted in Figs. 3 and 5 of Ankerst. The different rows representing different attributes depicted in Figs. 3 and 5 of Ankerst do not constitute partitioning record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute(note singular sense)….."

In response to arguments in (C), Appellant misinterpreted Ankerst's teaching in relation to the claim limitation set forth in the claims. Appellant argues in essence that Ankerst's attributes of the training data along the vertical axis in each of the Figs. 3-5 do not meet the claim limitation of "a first dividing attribute" of pixels. However, Appellant misinterpreted Ankerst's teaching in light of the claim limitation set forth in the claims. Appellant's analysis of Ankerst is erred since Appellant equates an apple with an orange by equating the attributes of the training data items in a representation to the attributes of pixels in a presentation.

Moreover, Ankerst's attributes of the training data items as represented by the pixels in the pixel bar chart of each figures of Figs. 3-5 do not correspond to the claimed first dividing

attribute for pixels. Appellant erred in their analysis since Appellant equates the attributes of training data items in a representation to the attributes of pixels in a presentation.

Even if the first dividing attribute of pixels has to be an attribute taken from the data items, Ankerst still teaches the claim limitation. The claimed first dividing attribute for pixels is clearly broadly construed in the claims. In Ankerst, the attribute values along the vertical axis of the Figs. 2-5 have been utilized to classify the pixels and divide the pixels into rows/bars/groups in the pixel bar chart so as to place the pixels into each row/bar of the plural bars in the pixel bar chart. Clearly, the claimed "first dividing attribute" has been implicitly taught in Ankerst when a collection of the attribute values in Figs. 2-5 have been used to divide the pixels so as to place the pixels in each row/bar of the plural bars in the pixel bar chart. *It is noted that the attributes taught in Ankerst are characterized as "categorical" and thus share the same characteristic. For the reasons to follow, the single collection of attributes as taught in Ankerst is categorical and can be classified under the same database table called "category". The same characteristic or "attribute" among the attributes of Ankerst meets the claim limitation of a first dividing attribute*.

Moreover, Ankerst's plural attributes *do not correspond* to the claimed first dividing attribute. In Figs. 2-5 of Ankerst, the pixels are classified into groups/rows according to a list of the attribute values wherein the attributes of Ankerst along the vertical axis are mapped to the sequential attribute numbers. Ankerst's attributes along the vertical axis are indexed by numerical numbers and they at least share a common numerical "attribute" (claimed attribute) that maps the attribute values to the numerical values. Ankerst have been employed a set of sequential attribute numbers to divide the rows/bars in the pixel bar chart of Figs. 3-5.

Ankerst's attributes along the vertical axis of Figs. 3-5 also share a common classification characteristic meeting the claimed "first dividing attribute". Therefore, the claimed first dividing attribute has been implicitly taught in Ankerst. The numerical attribute values as a collection have been used so as to place/divide the training data items into each row/bar of the pixel bar chart. Therefore, Ankerst teaches "a first dividing attribute" by utilizing the numerical attribute for the sequential attribute values along the vertical axis of Figs. 2-5 wherein the numerical attribute values are numerical as a characteristic. Moreover, Ankerst's attributes are also categorical meeting the claimed "attribute".

Additionally, for argument sake, even if the first dividing attribute for pixels has to be an attribute of the training data items, Ankerst still teaches the claimed attribute. For the reasons to follow, the attributes along the vertical axis of Figs. 2-5 for the data items may correspond to records in a database table and those records share a common attribute "RECORD" of representing the categories of the different data items.

The following illustrates the concept that a common attribute/characteristic exists for the attributes/records of the data items in a database. It is known that data records in a database are characterized by the attributes of the data records in a database. For example, plural data records may have a common attribute "CHILDREN" or "PARENT" in a database table of records categorized under "CHILDREN" or "PARENT" tables wherein "CHILDREN" table and "PARENT" table are further classified into the categorical attributes or "RECORD" called "Birth Date", "NAME" and "GENDER". The plural data records in "CHILDREN" table may have values 2001, 2002, 2003 corresponding to the categorical attribute "Birth Date". The plural data records in "CHILDREN" table may have values "Joe", "Tom" and "Sue" corresponding to the

categorical attribute called “NAME”. Even if "NAME", "GENDER" and "Birth Date" attributes of “CHILDREN” table have been used to classify the bars/rows in the pixel bar chart, the data records at least share a common attribute “RECORD” and a common attribute of being the records of the "CHILDREN" table. All of the categorical attributes share a common “RECORD” attribute in the table of "CHILDREN". The “RECORD” attribute (as opposed to the “TABLE” attribute) have been used as “a first dividing attribute” to place the data items in the “CHILDREN” table to the divided rows/bars in the pixel bar chart. In the same manner, the attributes of Ankerst draws in parallel with the “RECORD” attributes such as “NAME”, “GENDER” and “Birth Date”, they share the same characteristic corresponding to the claimed “attribute” such as “RECORD”, as opposed to “TABLE” attribute such as “PARENT” or “CHIDREN”. Therefore, for the reasons given above, the attributes of Ankerst for the training data items share a common characteristic and therefore meets the claimed “first dividing attribute”.

On page 18 in the ARGUMENT, the Appellant argued with respect to the Ankerst reference in substance:

> (D) “Note that the ordering of pixels along each row in Fig. 3 is according to the corresponding attribute of that row. For example, the ordering of pixels in the last row of Fig. 3 of Ankerst is according to attribute 120.”

In response to the arguments in (D), Appellant again mischaracterizes Ankerst's teaching. Appellant’s analysis of Ankerst is erred since Appellant equates an apple with an orange by

equating the attributes of the training data items in a representation to the attributes of pixels in a presentation.

Moreover, Ankerst's attributes of the training data items do not correspond to the claimed first dividing attribute for pixels. Appellant erred since Appellant equates the attributes of data items in a representation to the attributes of pixels in a presentation. Even if the first dividing attribute of pixels has to be an attribute taken from the data items, Ankerst still teaches the claim limitation.

The categorical attributes along the vertical axis in Figs. 2-3 are mapped to numerical values and therefore share a common numerical "attribute". There numerical values are utilized to divide the pixels into the different class partitions in a row of the plural rows/bars in the pixel bar chart (Figs. 2 and 4).

Ankerst clearly teaches in Page 4 the categorical attributes. These categorical attributes are labeled as categorical. Appellant's claim recitation of "a first dividing attribute" is clearly broadly construed and is met by Ankerst. The attributes along the vertical axis of Figs. 2-5 clearly share a common "attribute" under category wherein the attribute values have been utilized to divide the pixels in a plurality of rows/bars in the pixel bar chart. Appellant erred in equating Ankerst's plural categorical attributes with the claimed first dividing attribute. Appellant misinterpreted the Ankerst's teaching in relation to the claim invention set forth in the claim 44. .

Ankerst teaches allowing the pixels to be divided into a plurality of partitions along the x-axis for a particular row/bar of the plural rows/bars in the pixel bar chart (See Fig. 4). At Fig. 4 Ankerst teaches partitioning the pixel bar chart along the y-axis under a "*categorical attribute*"

or a numerical attribute (first dividing attribute) into rows/bars and partitioning/splitting each particular bar along the x-axis into a plurality of classes according to *the splitting attribute (second dividing attribute)*.

Appellant's claimed "attribute" is clearly a broad term. The claimed attributes in the context of the claim invention do not necessarily correspond to the Ankerst's attributes. The claimed first dividing attribute, second dividing attribute, first ordering attribute and second ordering attribute are subject to the broadest reasonable interpretation consistent with Appellant's specification. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003).

As addressed below, Fig. 2-5 and 7 discloses the pixels are sorted on a line-by-line basis within each class partition of Fig. 4 wherein at least a first ordering attribute and a second ordering attribute have been utilized in the ordering/sorting/arranging/positioning of the pixels in a *two-dimensional* screen space. Sorting the pixels in a line-by-line fashion utilizing the sorted attribute values requires a two-dimensional arrangement of the pixels in the two-dimensional screen space. Thus, Ankerst teaches a two-dimensional sorting which requires a first sorting attribute and a second sorting attribute.

In a non-limiting example, the first ordering attribute is related to the characteristic (*e.g., wherein the pixels are ordered in a sequential manner in accordance with the sequential characteristic of the sorted attribute values of Section 3.1*) used to order the pixels along the

vertical axis for the vertical lines. The pixels are also ordered along the horizontal axis wherein the second ordering attribute is related to the characteristic of ordering along the horizontal axis (*e.g., each vertical line is incremented along the horizontal axis in modulo m of Fig. 2, wherein m is the number of pixels along the vertical line in each class partition of Figs. 2-4*). The second ordering attribute (modulo m) is used to order/sort the pixels on a line-by-line basis for moving a vertical line to another vertical line along the horizontal axis (See Fig. 2). For example, in a class partition (5*4 pixels) of Fig. 2 or Fig. 4, the first ordering attribute is characterized by the ordering/sorting of 5 pixels along each vertical line in a sequential manner. The second ordering attribute is characterized by arranging in modulo 5 the pixels along the horizontal lines (Fig. 2). Finally, although Fig. 2 shows a single class partition for each row/bar of the pixel bar chart, Fig. 4 shows plural class partitions for each row/bar of the pixel bar chart. The ordering/sorting technique of Fig. 2 applies to any of the class Partitions in Figs. 3-5.

Appellant also argues that multiple rows are ordered according to different attributes along the x-axis, Appellant mischaracterizes Ankerst's teaching in light of the claim invention for the reasons given above. Appellant's argument is incorrect because in Ankerst, the pixels are divided and placed into the multiple rows (groups) according a single numerical "attribute" for the Ankerst's attribute numbers. Ankerst teaches dividing the pixels or the training data items in each row/bar into the class partitions in accordance with the splitting attribute having different splitting values (Section 4.1). Each row/bar is partitioned into a number of the class partitions. Ordering/sorting of the pixels within each class partition in a two-dimensional screen space is illustrated in Figure 2 (Fig. 2 shows one class partition for each row/bar of the pixel bar chart, however, Fig. 4 shows plural class partitions for each row/bar of the pixel bar chart).

Finally, in Ankerst pixels are divided into rows/bars and each row/bar is further divided into class partitions in accordance with the split attribute. Ankerst further teaches the two-dimensional sorting along the x-axis and y-axis for the pixels falling into each class partition wherein the pixels at each class partition of Fig. 4 or Fig. 2 are positioned *on a line-by-line fashion*. The pixels with each class partition in a row/bar are positioned in the two-dimensional screen space as the pixels are ordered for each class partition in a row/bar of the pixel bar chart of Fig. 4 in the two-dimensional screen space. Therefore, the pixels in each class partition of the particular bar in the pixel bar chart of Ankerst Fig. 4 are sorted/positioned/placed according to a first ordering attribute and a second ordering attribute along the x-axis and y-axis wherein the pixels in the two-dimensional screen space are ordered/positioned in the two-dimensional screen space. Fig. 2-5 and 7 discloses the pixels are sorted on a line-by-line basis within each class partition of Fig. 4 wherein at least a first ordering attribute and a second ordering attribute have been utilized in the ordering/sorting/arranging/positioning of the pixels in a *two-dimensional* screen space. Sorting the pixels in a line-by-line fashion utilizing the sorted attribute values requires a two-dimensional arrangement of the pixels in the two-dimensional screen space. Thus, Ankerst teaches a two-dimensional sorting which requires a first sorting attribute and a second sorting attribute in a two-dimensional sorting for the pixel bar visualization as taught in Fig. 2 and Section 3.1.

On page 18 in the ARGUMENT, the Appellant argued with respect to the Ankerst reference in substance:

(E) "The Examiner has apparently identified parts of multiple rows depicted in Figs. 3 and 5 as being a sub-group; however, since the multiple rows are ordered according to different attributes along the x-axis, it would be impossible for Ankerst to order pixels in each of the sub-groups (which was asserted by the Examiner as including parts of multiple rows) according to a second ordering attribute along the second axis of the pixel bar chart."

In response to the arguments in (E), the Examiner responses to arguments in (D) also apply here.

Appellant mischaracterizes Ankerst's teaching. The multiple rows/bars are obtained in accordance with a unique "categorical" attribute of the Ankerst's plural attributes since all of the attributes or attribute values in Figs. 3-5 along the vertical axis are categorical.

Ankerst teaches allowing the training data items to be divided into a plurality of partitions along the x-axis for a particular row/bar in the pixel bar chart (See Fig. 4). At Fig. 4 Ankerst teaches partitioning the pixel bar chart along the y-axis wherein the attribute numbers are referred to as "*categorical*" under the category attribute (first dividing attribute) into rows/bars and partitioning/splitting each particular bar along the x-axis into a plurality of classes according to *the splitting attribute (second dividing attribute)*.

As addressed below, Fig. 2-5 and 7 discloses that the pixels are sorted on a line-by-line basis within each class partition of Fig. 4 wherein at least a first ordering attribute and a second ordering attribute have been utilized in the ordering/sorting/arranging/positioning of the pixels in a *two-dimensional* screen space. Sorting the pixels *in a line-by-line fashion* utilizing the sorted attribute values requires a two-dimensional arrangement of the pixels in the two-dimensional

screen space. Thus, Ankerst teaches a two-dimensional sorting which requires a first sorting attribute and a second sorting attribute.

In a non-limiting example, the first ordering *attribute* is related to the *characteristic* (*e.g., wherein the pixels are ordered in a sequential manner in accordance with the sequential characteristic of the sorted attribute values of Section 3.1*) used to order the pixels along the vertical axis for the vertical lines. The pixels are also ordered along the horizontal axis wherein the second ordering attribute is related to the characteristic of ordering along the horizontal axis (*e.g., each vertical line is incremented along the horizontal axis in modulo m of Fig. 2, wherein m is the number of pixels along the vertical line in each class partition of Figs. 2-4*). The second ordering attribute (modulo m) is used to order/sort the pixels on a line-by-line basis for moving a vertical line to another vertical line along the horizontal axis (See Fig. 2). For example, in a class partition (5*4 pixels) of Fig. 2 or Fig. 4, the first ordering attribute is characterized by the ordering/sorting of 5 pixels along each vertical line in a sequential manner. The second ordering attribute is characterized by arranging in modulo 5 the pixels along the horizontal lines (Fig. 2). Finally, although Fig. 2 shows a single class partition for each row/bar of the pixel bar chart, Fig. 4 shows plural class partitions for each row/bar of the pixel bar chart. The ordering/sorting technique of Fig. 2 applies to any of the class Partitions in Figs. 3-5.

Appellant's claimed "attribute" is clearly a broad term. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003).

Finally, in Ankerst the pixels are divided into rows/bars in accordance with the sequential numerical numbers and each row/bar is further divided into class partitions in accordance with the split attribute. Ankerst further teaches the two-dimensional sorting along the x-axis and y-axis for the pixels falling into each class partition wherein the pixels at each class partition of Fig. 4 or Fig. 2 are positioned in the two-dimensional space (Fig. 2). The pixels with each class partition in a row/bar are positioned in accordance with the sorted attribute values and the pixels are arranged in the two-dimensional screen space as the pixels are sorted for each class partition in a row/bar of the pixel bar chart of Fig. 4 in the two-dimensional screen space. Therefore, the pixels in each class partition of the particular bar in the pixel bar chart of Ankerst Fig. 4 are sorted/positioned/placed according to a first ordering attribute and a second ordering attribute in a two-dimensional sorting for arranging the pixels in each class partition in the two-dimensional space wherein the two-dimensional sorting is taught in Fig. 2 and Section 3.1.

On page 18 in the ARGUMENT, the Appellant argued with respect to the Ankerst reference in substance:

> (F) "As stated by Ankerst, 'each attribute is visualized independently from the other attributes in a separate bar. Figure 2 illustrates the method of the bar visualization for the case of two attributes'."

In response to the arguments in (F), the Examiner's responses to arguments in (D) also apply here.

Moreover, Appellant mischaracterizes Ankerst's teaching in relation to the claim invention. Appellant's claim limitation of "attribute" is broadly construed.

In Ankerst Page 3, the categories are mapped to different numbers (categorical attribute numbers) and the attributes of Ankerst along the vertical axis are "categorical" while the attribute numbers of Ankerst are numerical. The numerical attribute numbers set forth in Figs. 3-5 are the attribute values for the training data items/records in Figs. 3-5 mapped from the categories in a categorical representation. In other words, Ankerst's attributes are mapped to numerical values which bear a numerical representation. The attribute numbers are numerical. Ankerst employed the attribute numbers for the training data items to divide the pixels into the groups/rows/bars in the pixel bar chart in accordance with the mapped numbers and therefore implicitly teaches the claimed "first dividing attribute" since there is a singular numerical attribute within the Ankerst's attribute numbers. It is noted that the claimed first dividing attribute is conceptually different from Ankerst's plural attributes of the training data items along the vertical axis of Figs. 3-5. Appellant cannot misinterpret the claim invention in relation to the prior art teaching. Ankerst's attributes of the training data items are categorical bearing a categorical characteristic meeting the claim limitation of a first dividing attribute for pixels. Ankerst's attribute numbers are numerical and ordered sequentially and the numerical characteristic within Ankerst's attribute numbers meets the claim limitation of a first dividing attribute. The categorical attributes as shown in Figs. 3-5 for the vertical axis are *characterized* as being categorical and are employed to *divide* the training data items into the rows/bars of the pixel bar chart and thus Ankerst at least implicitly teaches a first dividing attribute as claimed.

On page 19 in the ARGUMENT, the Appellant argued with respect to the Ankerst reference in substance:

> (G) "In fact, as taught by Ankerst, each attribute of the training data is visualized in a separate area of the screen (see Section 3.1 on page 3 of Ankerst), and each attribute is sorted separately and independently from the other attributes in a separate bar. Figure 2 illustrates the method of the bar visualization for the case of two attributes.' Ankerst, page 3, left column, last paragraph. As further stated by Ankerst, 'each attribute is sorted separately and the induced order is used for the arrangement of the pixels'. "

In response to arguments in (G), Appellant misinterpreted Ankerst's teaching in light of the claim limitation set forth in the claims. Appellant's analysis of Ankerst is erred since Appellant equates an apple with an orange by equating the attributes of training data items in a representation to the attributes of pixels in a presentation. Moreover, Ankerst's attributes of the training data items do not correspond to the claimed first dividing attribute for pixels. Appellant erred since Appellant equates the attributes of data items/records in a representation to the attributes of pixels in a presentation. Even if the first dividing attribute of pixels has to be an attribute taken from the data records or the training data items of Ankerst, Ankerst still teaches the claim limitation.

In Ankerst, the attribute values along the vertical axis of the Figs. 2-5 have been utilized as a collection to divide the pixels so as to place the pixels into each row/bar of the plural bars in the pixel bar chart. Clearly, the claimed "first dividing attribute" has been implicitly taught in

Ankerst when a collection of the sequential attribute values in Figs. 2-5 have been used to divide the pixels so as to place the pixels in each row/bar of the plural bars in the pixel bar chart.

Moreover, Ankerst's attributes of the training data items do not correspond to the claimed first dividing attribute for pixels. Appellant erred since Appellant equates the attributes of the training data items/records in a representation to the attributes of pixels in a presentation. The first dividing attribute as claimed does not have to be an attribute of the data items/records. Even if the first dividing attribute of pixels has to be an attribute taken from the data items/records, Ankerst still teaches the claim limitation of a first dividing attribute. In a non-limiting example, the collection of attributes of the data items/records in any of the pixel bar chart of Figs. 3-5 shares a common characteristic as required by the claim. In Figs. 2-5 of Ankerst, the pixels are classified into groups/rows according to a list of the attribute values wherein the numerical values (sharing a numerical attribute) have been utilized. Ankerst's attributes along the vertical axis are indexed by numerical numbers in a screen-space representation. Ankerst's numerical attribute for the numerical numbers shared by the attributes of the data items/records meets the claimed first dividing attribute. The attribute values as a single collection have been used so as to place/divide the pixels into each row/bar of the pixel bar chart. Therefore, Ankerst teaches a numerical characteristic for the numerical attribute numbers that meets the claimed *"first dividing attribute" for the mapped numbers (the mapping attribute) which are different from the "splitting attribute"*. It is noted that Ankerst teaches the same visualization technique as Appellant's visualization technique wherein the plural bars and class partitions are arranged both vertically and horizontally (Fig. 4). Ankerst thus teaches a first dividing attribute and a second dividing attribute. Ankerst teaches a two-dimensional sorting for the pixels in each particular

class partition so as to place the pixels in the class partitions arranged horizontally with each bar of the plural bars arranged vertically. Ankerst teaches a first sorting attribute and a second sorting attribute so as to arrange the pixels in a two-dimensional screen space.

Additionally, for argument sake, even if the first dividing attribute for pixels has to be an attribute of the training data items/records, Ankerst still teaches the claimed attribute. For the reasons to follow, the attributes along the vertical axis of Figs. 2-5 for the training data items/records may correspond to records in a database table and those records share a common attribute "RECORD" of representing the categories of the different training data items.

The following illustrates the concept that a common attribute/characteristic exists for the attributes/records of the data items in a database. It is known that data items/records in a database are characterized by the attributes of the data items/records. In a non-limiting example, plural data items/records may have a common attribute "CHILDREN" or "PARENT" in a database table of records categorized under "CHILDREN" or "PARENT" tables wherein "CHILDREN" table and "PARENT" table are further classified into the categorical attributes or "RECORD" called "Birth Date", "NAME" and "GENDER". The plural data records in "CHILDREN" table may have values 2001, 2002, 2003 corresponding to the categorical attribute "Birth Date". The plural data records in "CHILDREN" table may have values "Joe", "Tom" and "Sue" corresponding to the categorical attribute called "NAME". Even if "NAME", "GENDER" and "Birth Date" attributes of "CHILDREN" table have been used to classify the bars/rows in the pixel bar chart, the data records at least share a common attribute "RECORD" and a common attribute of being the records of the "CHILDREN" table. All of the categorical attributes share a common "RECORD" attribute in the table of "CHILDREN". The "RECORD" attribute (as

opposed to the "TABLE" attribute) have been used as "a first dividing attribute" to place the data items or data records in the "CHILDREN" table to the divided rows/bars in the pixel bar chart. In the same manner, the attributes of Ankerst draws in parallel with the "RECORD" attributes such as "NAME", "GENDER" and "Birth Date", they share the same characteristic or the claimed "attribute" such as "RECORD", as opposed to "TABLE" attribute such as "PARENT" or "CHIDREN". Therefore, for the reasons given above, the attributes of Ankerst share a common characteristic and therefore meets the claimed "first dividing attribute".

On page 20 in the ARGUMENT, the Appellant argued with respect to the claim 63 and similar claims in light of the Ankerst reference in substance:

> (H) "the language of claim 63 that the pixels are sorted in each sub-group according to first and second ordering attributes along two axes cannot be satisfied if just one row is considered to be a sub-group."

In response to the arguments in (H), Appellant mischaracterizes Ankerst's teaching. Moreover, Ankerst's attributes of the training data items/records in Figs. 3-5 do not correspond to the claimed first dividing attribute for pixels. Appellant erred since Appellant equates the attributes of data items in a representation to the attributes of pixels in a presentation.

The categorical attributes along the vertical axis in Figs. 2-3 are mapped to numerical values and the attributes of Ankerst are categorical having a categorical "attribute" and the mapped attribute numbers are numerical having a numerical "attribute". The rows/bars in the pixel bar chart are clearly sorted in accordance with the sequential numerical values in the

vertical axis. Moreover, each subgroup/partition of pixels within a particular row/bar of Figs. 3-5 is sorted along the horizontal axis as well as along the vertical axis according to the values of the individual categorical attribute values of the training data items corresponding to the pixels falling within each subgroup/partition. Therefore, the two-dimensional sorting is taught by Ankerst which requires a first ordering attribute and a second ordering attribute in a two-dimensional ordering of the pixels. It is noted that Ankerst teaches the same visualization technique as Appellant's visualization technique wherein the plural bars and class partitions are arranged both vertically and horizontally (Fig. 4). Ankerst thus teaches a first dividing attribute and a second dividing attribute. Ankerst teaches a two-dimensional sorting for the pixels in each particular class partition so as to place the pixels in the class partitions arranged horizontally with each bar of the plural bars arranged vertically. Ankerst teaches a first sorting attribute and a second sorting attribute so as to arrange the pixels in a two-dimensional screen space.

On page 21-22 in the ARGUMENT, the Appellant argued with respect to the claim 64 and similar claims in light of the Ankerst reference in substance:

> (I) "Nowhere in Ankerst is there any reference to histograms for first and second ordering attributes."

In response to the arguments in (I), according to Appellant's specification the claimed histogram is nothing but the ordering distribution/frequency/statistics. For the reasons set forth above, since Ankerst teaches ordering of the pixels in a two-dimensional space wherein the

pixels are ordered in accordance with the ordering distribution/frequency/statistics (Fig. 2). Ankerst teaches in Section 3.2 the *class distribution (frequency and location of the training instances of all classes*). Therefore Ankerst teaches histograms for first and second ordering attributes for ordering the pixels in a class partition of Fig. 4 in a two-dimensional space. Moreover, each subgroup/partition within a particular row/bar of Figs. 3-5 is sorted along the horizontal axis as well as along the vertical axis according to the values of the individual categorical attribute values of the training data items in Figs. 3-5 corresponding to the pixels falling within each subgroup/partition. Therefore, the two-dimensional sorting of pixels is taught by Ankerst which requires a first ordering attribute and a second ordering attribute in a two-dimensional ordering of the pixels. Therefore, Ankerst teaches a numerical characteristic for the numerical attribute numbers that meets the claimed "first dividing attribute". It is noted that Ankerst teaches the same visualization technique as Appellant's visualization technique wherein the plural bars and class partitions are arranged both vertically and horizontally (Fig. 4). Ankerst thus teaches a first dividing attribute and a second dividing attribute. Ankerst teaches a two-dimensional sorting for the pixels in each particular bar or each particular class partition so as to place the pixels in the class partitions arranged horizontally with each bar of the plural bars arranged vertically. Ankerst teaches a first sorting attribute and a second sorting attribute so as to arrange the pixels in a two-dimensional screen space.

Appellant's claimed "attribute" is clearly a broad term. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in

the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003).

Finally, Ankerst pixels are divided into rows/bars and each row/bar is further divided into class partitions in accordance with the split attribute. Ankerst further teaches the two-dimensional sorting along the x-axis and y-axis for the pixels falling into each class partition wherein the pixels at each class partition of Fig. 4 or Fig. 2 are positioned in the two-dimensional screen space. The pixels with each class partition in a row/bar are positioned in the two-dimensional screen space as the pixels are sorted for each class partition in a row/bar of the pixel bar chart of Fig. 4 in the two-dimensional screen space (Fig. 2 shows a single partition per bar and Fig. 4 shows plural partitions per bar). Therefore, the pixels in each class partition of the particular bar in the pixel bar chart of Ankerst Fig. 4 are sorted/positioned/placed according to a first ordering attribute and a second ordering attribute in a two-dimensional sorting.

On page 22 in the ARGUMENT, the Appellant argued with respect to the claim 81 and similar claims in light of the Ankerst reference in substance:

> (J) "Independent claim 81 is allowable over Ankerst, which fails to disclose assigning records to respective data points of a pixel bar chart, and partitioning the data points into groups and sub-groups according to respective first and second dividing attributes. Nor does Ankerst disclose sorting, in each sub-group, the data points according to first and second ordering attributes along first and second axes."

In response to the arguments in (J), Appellant made general allegation. Appellant misinterpreted Ankerst's teaching in light of the claim invention. Moreover, Ankerst's attributes of the training data items do not correspond to the claimed first dividing attribute for pixels. The claimed first dividing attribute for pixels does not have to be an attribute of the training data items. Appellant erred since Appellant equates the attributes of the training data items in a representation to the attributes of pixels in a presentation. Even if the first dividing attribute of pixels has to be an attribute taken from the data items/records, Ankerst still teaches the claim limitation.

In a non-limiting example, Ankerst teaches the claim invention in the same manner as described in the Appellant's specification. Ankerst teaches the two-dimensional sorting of the pixels in each class partition. The sorted attribute values are mapped and the pixels are arranged in a line-by-line fashion according to their order in the two-dimensional space. Therefore, Ankerst teaches a numerical characteristic for the numerical attribute numbers that meets the claimed "first dividing attribute". It is noted that Ankerst teaches the same visualization technique as Appellant's visualization technique wherein the plural bars and class partitions are arranged both vertically and horizontally (Fig. 4). Ankerst thus teaches a first dividing attribute and a second dividing attribute. Ankerst teaches a two-dimensional sorting for the pixels in each particular class partition so as to place the pixels in the class partitions arranged horizontally with each bar of the plural bars arranged vertically. Ankerst teaches a first sorting attribute and a second sorting attribute so as to arrange the pixels in a two-dimensional screen space.

Appellant's claimed "attribute" is clearly a broad term. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris,

127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003).

Finally, In Ankerst the pixels corresponding to the training data items/records in Figs. 3-5 are divided into rows/bars and each row/bar is further divided into class partitions in accordance with the split attribute. Ankerst further teaches the two-dimensional sorting along the x-axis and y-axis for the pixels falling into each class partition wherein the pixels at each class partition of Fig. 4 or Fig. 2 are positioned in the two-dimensional screen space (Fig. 2 shows one class partition per bar). The pixels with each class partition in a row/bar are positioned in the two-dimensional screen space as the pixels are sorted for each class partition in a row/bar of the pixel bar chart of Fig. 4 in the two-dimensional screen space. Therefore, the pixels in each class partition of the particular bar in the pixel bar chart of Ankerst Fig. 4 are sorted/positioned/placed according to a first ordering attribute and a second ordering attribute in a two-dimensional sorting.

On page 22 in the ARGUMENT, the Appellant argued with respect to the claim 44 and similar claims in light of the Hao reference in substance:

> (K) "In the construction of the pixel bar chart of Fig. 2 described in the Hao HP Technical Report, there is only one partitioning, along the x-axis for different months. There is no partitioning along the y-axis. Instead, along the y-axis, each rectangle corresponding to the partitions along the x-axis are filled with pixels and ordered according to an ordering attribute."

In response to arguments in (K), Appellant argues that Hao only teaches one ordering attribute. However, Appellant ignored the overall teaching in Hao. Hao clearly teaches in *Section 3* two ordering attributes including the *Y-ordering attribute and the X-ordering attribute*. Appellant further argues that Hao does not teach partitioning along the y-axis. The Examiner respectfully disagrees. Hao teaches in Fig. 5 at least two partitions along y-axis for a particular bar of plural bars in the pixel bar chart wherein the partitioning is performed in accordance with the coloring attribute of the pixels corresponding to the quantity attribute of the data records. Therefore, Hao teaches partitioning the record-assigned pixels in each group or each bar into sub-groups of pixels having the same color wherein the subgroups of pixels are arranged along a vertical axis of the particular bar in the pixel bar chart according to a coloring attribute. Hao's dividing attribute meets the claimed first dividing attribute (Section 3). Hao's coloring attribute meets the claim limitation of a second dividing attribute.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jin-Cheng Wang/

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